A LIVABLE ENVIRONMENT FOR WILDLIFE IS A QUALITY ENVIRONMENT FOR MAN

Montana Outdoors

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Gone With The Sage

By: Joel Peterson

Without sagebrush, sage grouse can not survive.

A race of people once lived on an isolated island somewhere in the Pacific Ocean. The land was extremely fertile, providing the essentials of life. Their mainstay consisted of cattle and grain crops for food, while trees provided the wood needed to make shelter.

One day the island began to sink into the ocean, causing an onslaught of water which covered trees, grass and croplands. The island's people were forced to move to the high and barren mountains. Here, there was little or no food or shelter and no grass for their cattle. Eventually they perished.

So, too often, is the fate of wildlife. Their demise may not always be as dramatic and may occur almost unnoticeably slow. However it happens, and is often either directly or indirectly the result of land use, and often unavoidable. Land once used almost exclusively for food and cover by wild animals is now used to provide food and shelter for man. The demand for products of the land (food crops, lumber, hay, beef, metals, etc.) can only increase as the human population increases. As a result, wildlife will suffer.

Sage grouse, as other wild birds and animals, have specific physical requirements. Basic to these grouse is the sagebrush-grassland type of habitat. Sage grouse use sagebrush for escape, roosting, loafing, brooding, and nesting cover. They are seldom found far from these plants. During the fall, winter, and spring, sagebrush leaves provide the bulk of the diet for sage grouse. Even during the summer, when forbs (weedy plants) and insects are utilized to varying degrees, adult sage grouse still feed on sagebrush seed heads and leaves. Healthy stands of sagebrush are a must during periods of deep snow.

So it is with the sage grouse of Meagher County where they inhabit a 5,000 foot high valley between several mountain ranges. The sagebrush grassland area in this report pertains to this area in Meagher County around White Sulphur Springs, Montana. Information was gained from an intensive study conducted southwest of that town.

The shaded area in figure 1 indicates the approximate distribution of sagebrush in the study area prior to any land break-up, probably around 1915 (approximately 24,500 acres in sagebrush). At that time, settlement began and the first sagebrush was probably plowed or burned to create fields for a grain or hay crop.

Between 1915 and 1941, the hunting season for sage grouse in Meagher County was periodically opened or closed each year during which times a bag limit of 1-5 birds was allowed. From 1942-1957, there was no open season on sage grouse in Meagher County.

Long-time residents to this area often relate to past times when sage grouse were considered plentiful. A study by the fish and game department in 1942 rated sage grouse from common to abundant in Meagher County. However, it was felt at that time that a season would seriously affect sage grouse populations in the "restricted" habitat area found there. This view was apparently shared by local landowners. It was also noted in the 1940's that sagebrush eradication was being accelerated by the use of heavy equipment—tractor and plow capable of turning 20 acres of sagebrush per day.

Because sagebrush eradication was at first gradual, people apparently did not notice any great changes in the land. However, by 1955, approximately 7,508 acres, or 31% of the original stand of sagebrush within the study area had been converted to cropland or hay meadows.

Each spring, male sage grouse assemble on certain areas to display in courtship during the mating period. These areas, called strutting grounds, are used year after year and are censused to aid in determining yearly trends of sage grouse populations. Four of these strutting grounds have been censused since 1953 and one since 1955 in the study area.

The steady trend of sagebrush eradication prior to 1956 which destroyed 31% of the original sage grouse habitat in the study area is coincidental with a decline of the sage grouse population in the study area. This was reflected by strutting ground trend counts during a period when hunting was not allowed.

Strutting grounds No. 3 and No. 4, which were both first censused in 1953 and revealed 34 and 46 males respectively, were all but abandoned by 1958. No males displayed on ground No. 3 and only 3 displayed on ground No. 4. There had not been hunting seasons there for 16 years. In 1958 a hunting season was finally opened for sage grouse in Meagher County. It has since varied from 2 through 8 days and a bag limit of 3 birds. Two new strutting grounds indicate movement from No. 3 and No. 4 to areas surrounded by more sagebrush. This would indicate a dependency by these birds to be close to a good source of sagebrush cover during their mating activities.

A road census count along an established route through the study area from 1948 to 1952, showed a decrease from 6 birds per mile in 1948 to 3.6 birds per mile in 1952. Although natural fluctuations occur in bird populations each year due to the success of the hatch and other factors, the general trend here is again downward during a period when no hunting was allowed and habitat was being lost.

There were 116 fewer males present on the 5 strutting grounds in 1958 than when these areas were first censused five years earlier. During the next five years after hunting season opened, the count dropped by 79 males. This further indicates the downward trend in the sage grouse population, but does not lend support to the contention by some that hunting is directly the cause of this trend.

From 1955 to 1970, an additional 4,300 acres of sagebrush, approximately, were eradicated or treated with chemicals. This was 18% of the original stand of sage in the study area or 25% of the sage standing since 1955. This means that 49% of the original sagebrush has been altered. In other words, nearly one-half of the original sage grouse habitat in the study area has been destroyed.

During most of this period, use of strutting ground No. 2 (71 males in 1954 and 66 in 1964) remained at

ORIGINAL SAGEBRUSH DISTRIBUTION

Figure 1. Original sagebrush diistribution in the study area.

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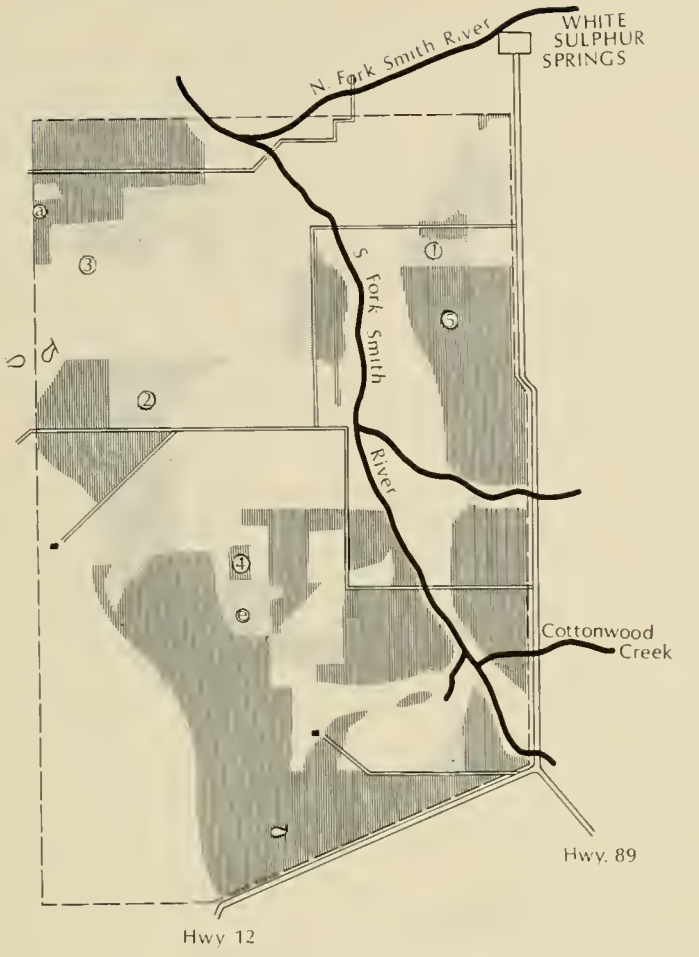


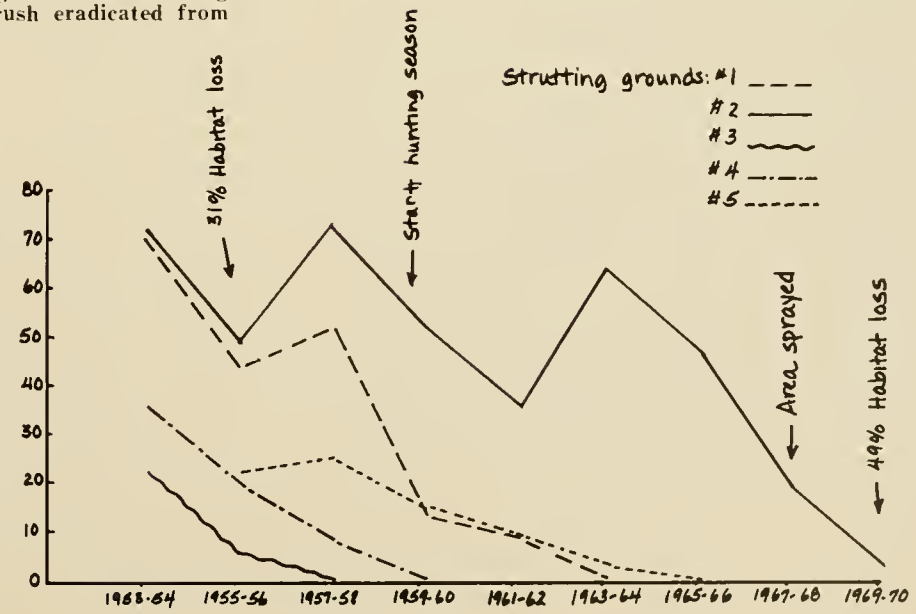
Striped and dotted areas show sagebrush areas during 1955. Dotted areas represent sagebrush eradicated from 1955 to 1970.

a fairly high level, even in the face of a hunting season. However, in 1967 the acreage in and around that area was treated with 2-4D to kill the sagebrush. In the spring of 1968, only 17 males were observed, and in 1970 there were only 3. This area had become practically isolated from the surrounding sagebrush since 1955, and the spray treatment appears to have all but put this strutting ground out of existance.

Ground No. 1 has also decreased since first counted on 1953. There were 79 males on that ground the first spring, but only 36 three years later. The big drop was suffered from 1958 to 1960 following the first hunting season in years (52 males in 1958 to 8 in 1960). Though one may be inclined to attribute the drop to hunting, it should be noted that there was an almost identical drop prior to 1957. Ground No. 5 suffered similar fate as the rest, with the last male being observed there in the spring of 1964.

Past studies have revealed that hunting normally takes only a small percentage of the surplus game birds produced each year. This surplus is an annual crop which is lost if not harvested. Those who have hunted in this area should be thankful that they had the chance. Those who advocate closing the season to allow the sage grouse to increase might stop and think for a moment . . . if a hunting season were not allowed here since 1915, do you think the birds would have increased or even remained static when approximately 50% of their habitat has been destroyed. One might ask himself this same question when he visits his favorite grouse hunting area this fall.

The plight of the sage grouse in this area is typical of our game bird populations found in much of the state. Land development, clean farming, intense grazing, pesticides, etc., have all contributed to lower the quality of our land for wildlife. Montana has lost in the past, and will continue to lose wildlife habitat. If there are to be game birds and animals for the enjoyment of future generations, those segments of the environment which are so vital to their survival must be protected now.



Migration Habits of the Gallatin Elk Herd

By: Eugene O. Allen

Over the years, the Upper Gallatin elk herd has been the topic for more than its share of discussion and controversy. Directly or indirectly, much of the discussion centers around migration habits and how they relate to the hunting season. The migratory instinct is not unique to Gallatin elk and many of Montana's game birds and animals migrate. For most of them, migration is necessary to successfully play the difficult game of survival. Knowledge of wildlife migration habits is of special importance to game managers responsible for establishing hunting regulations and effective management programs.

In the Gallatin, almost every possible type of hunting season has been employed in attempts to obtain the necessary harvest and accomodate hunters—most have met with only limited success. In the Upper Gallatin, a successful elk hunt is dependent upon movement of elk out of Yellowstone National Park where they will be available to the hunter. This movement is triggered by weather—until the area has experienced a few severe, early winter storms, hunting is only mdiocre at best.

The Gallatin elk herd is comprised of several wintering herd segments. To maintain or improve winter range conditions, it is necessary to regulate the number of elk in these individual segments. The best and most logical way to do this is by hunter harvest. This usually requires late, special seasons, sometimes running well into February—effective, but not too popular with some segments of the sporting public. Fall hunting is more desirable, but not as simple. Because elk have not yet reached their winter range, it is difficult to know from which winter segment elk are being harvested.

In a situation such as this, the importance of detailed knowledge of migration habits and fall distribution patterns is obvious. In an attempt to fill in the gaps and add to our knowledge of the migration habits of Gallatin elk, a study was initiated during the winter of 1965-66.

During December, 1965 and January 1967, 307 elk were individually marked with neckbands at the Daly Creek trap in the Upper Gallatin. By May, 1968, 298 (97 percent) of the banded elk were relocated a total of 1,797 times, mostly during periodic helicopter surveys.

Summer observations reveal two major summering areas for Upper Gallatin elk. The major portion of herd summers high inside Yellowstone National Park on the ridge separating the Yellowstone and Gallatin Rivers. Most elk are found near the head of Specimen Creek, Fan Creek and the Gallatin River on the Gallatin side and Fawn and Panther Creeks on the Yellowstone side. Relatively few elk are summer residents betwen Porcupine and Specimen Creeks.

A smaller segment of the herd summers west of the Gallatin River in Bacon Rind and Migration Creeks and the head of Sage, Tepee, Cabin and Beaver Creeks.

Observations indicate four major wintering areas — the Yellowstone National Park boundary vicinity, Porcupine Creek vicinity and Taylor Fork in the Gallatin drainage and between Indian and Bear Creeks on the Madison.

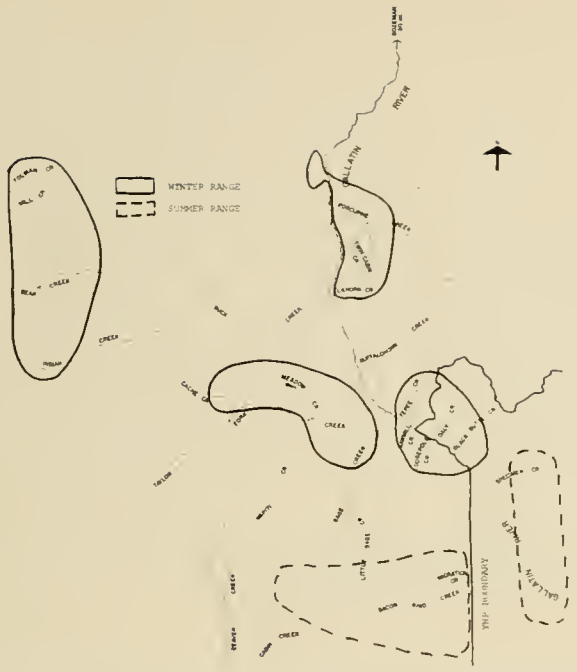
Movements from summer ranges are triggered mainly by snow and generally begin sometime in October. These movements are evidenced by a gradual buildup of elk in the Yellowstone National Park boundary vicinity in Tepee and Daly Creeks. Large numbers of elk from both major summering areas funnel into this relatively small area and remain until the heavier snows of November and December push them north and west to winter ranges in Porcupine, Taylor Fork and the east side of the Madison. The timing and extent of elk movements away from the Tepee-Daly Creek area are directly related to weather. The extent of movements to the northern and western extremities of the winter range is greater during a severe winter than during a mild one, especially when the severity occurs early in the winter.

Neckbanded elk, lower elk in photo, are easily spotted from aircraft.

Observations of banded elk, hunter returns of marked elk, and track-

BEGINNING NOVEMBER, MONTANA OUTDOORS WILL BE INCREASED TO 32 PAGES AND WILL CONTAIN COLOR.

THIS WILL BE THE FISH AND GAME DEPARTMENT'S OFFICIAL PUBLICATION AND THERE WILL BE ONLY ONE MORE ISSUE OF MONTANA WILDLIFE.



Summer and winter ranges for upper Gallatin elk.

Migration routes of upper Gallatin elk.

ing during aerial surveys provide information to define at least the major migration routes from summer to winter ranges.

Major routes utilized by elk moving from high summer range east of the Gallatin River to the Tepee-Daly Creek vicinity appear fairly simple and generally follow drainage bottoms east of the river. Once these "Yellowstone Park elk" reach the Tepee-Daly Creek vicinity, however, things become a bit more complicated. Significant numbers of these elk are found later in the winter on all four major winter ranges.

There are two major routes between Tepee-Daly Creek and the Porcupine winter range. One is over the Daly-Buffalohorn Pass, across Buffalohorn Creek and into Porcupine Creek. The other is over the Tepee-Buffalohorn Pass, across Buffalohorn and Elkhorn Creeks and into Porcupine Creek. During the more severe winters, some elk drift below Porcupine to Dudley and Deer Creeks.

Migration routes to winter ranges west of the river are more varied than those to Porcupine. Most elk moving west from the Tepee-Daly Creek area find their way into Taylor Fork. One route is along the Gallatin River entering Taylor Fork near its mouth. Another route leads westerly from the Tepee-Daly Creek area, crosses Sage Creek and enters Taylor Fork in the vicinity of Slide and Wapiti Creeks. Many "Taylor Fork" elk move on to the Madison, mostly through Meadow and Cache Creeks into Indian and Bear Creeks.

While elk from west side summer ranges also find their way to all four major wintering ranges, most of them winter west of the Gallatin River. It appears three general routes are used. One is along both sides of the Gallatin River to the Tepee-Daly Creek area. From there, routes are similar to those already discussed. Many elk eventually find their way to Taylor Fork, apparently bypassing Tepee-Daly Creek by a more direct route through Sage Creek. Others use a more south-westerly route, through Cabin and Beaver Creeks, some detouring into Taylor Fork, others moving directly to the Madison.

The migration habits of Gallatin elk were found to be very consistent. With few exceptions, elk can be expected to winter in the same general vicinity as they have previous years. Large numbers of elk from each winter range are found summering together in large herds. As fall approaches they go their separate ways in what may appear to be quite haphazard and without direction, but in reality each elk apparently knows exactly where he is going. While some consider all elk in the Upper Gallatin as one large herd, there are actually several herd segments. Each one acts predictably different from the others (an important consideration for management). There is also evidence indicating that elk arriving earliest in the Tepee-Daly area are most likely the elk which leave first and travel to the northern and western extremes of the winter range.

Elk have always been at home in the mountains and elk were seen in the Gallatin by Osborne Russell and other early explorers. Historical distribution patterns of the Gallatin elk herd were probably very similar to those of the present. There is an often-repeated theory that Gallatin elk used to migrate down the Gallatin River and winter in the foothills and open country near Gallatin Gateway. There is no evidence to support this theory and there is much evidence to discount it. Old newspaper reports indicate many hunters made the difficult and dangerous journey to the "basin" (Porcupine Creek) to hunt elk in the early days. No accounts have been found of

hunters waiting for a migration of elk at the mouth of the canyon or at the foot of the mountains. Only two elk from over 1,000 tagged as calves in the Upper Gallatin between 1938 and 1963 were killed north of what has been described as present winter range. During the present study, of nearly 1,800 observations of marked elk, none were seen north of present winter range. Elk seen wintering in the Gallatin Valley by early settlers were most likely summer residents of the adjacent foothills, and were probably quickly eliminated by encroaching civilization as the valley was settled. At any rate, what used to be in the Gallatin, whatever it was, has little bearing on present—the present situation is what we must work with.

The migration study described here was but one step of many taken during the past twenty years to reveal the nature of the present elk situation in the Upper Gallatin. As determinations were made, they were incorporated into management programs. A change from previous years in the 1969 hunting season dates was the direct result of migration information gathered during this study. More changes will be made in the future, each one refining further a management program designed to guarantee a permanent and secure place for elk in the future of the Upper Gallatin.

It has been said, "The only way to command Mother Nature, is by obeying her." But even before we can command or obey, we must understand. The recently completed migration study was an important step in that direction.

A Daisey for the Caverns

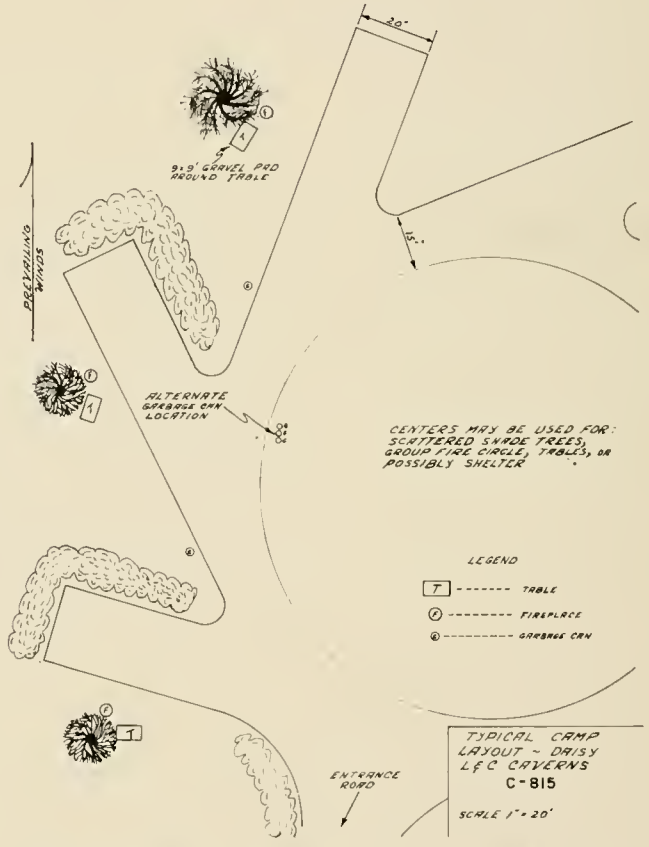
By: Steve Joppa

Lewis and Clark Caverns State Park is located approximately 16 miles east of Whitehall, Montana. They are the largest limestone caverns in the Pacific Northwest.

The caverns were discovered in 1892 and came under fish and game department jurisdiction during 1965. In 1950, 26,742 persons went through the caverns. By 1960, visitors had increased to 41,279 and last year there were 83,241 visitors. In addition to cavern visitors, there are several thousand persons who use the facilities but don't go through the caverns. As a consequence the parking areas, camping facilities and picnic areas were becoming sadly overtaxed.

In 1968 a Bureau of Outdoor Recreation Project was written to update the facilities. It is still in effect and improvements are continuing. A large portion of the project has been completed. Roads, parking areas, and camping facilities, were built next to U. S. Highway 10 west of the information building. These facilities will accommodate approximately 47 campers or trailers and 7 picnic vehicles. This campground incorporates a new daisy cluster concept in camper parking. Although other states have previously used this design, it is new for Montana.

With this design more camper space is provided per road foot than with other configurations. How the public will accept and use it is yet to be studied.


20'
9.9' GRAVEL PAD AROUND TABLE
PREVAILING WINDS
ALTERNATE GARBAGE CAN LOCATION
CENTERS MAY BE USED FOR: SCATTERED SHADE TREES, GROUP FIRE CIRCLE, TABLES, OR POSSIBLY SHELTER
LEGEND
T ------- TABLE
F -------- FIREPLACE
G --------- GARBAGE CAN
TYPICAL CAMP LAYOUT ~ DAISY L&C CAVERNS
C-815
SCALE 1" = 20'
ENTRANCE ROAD

This is a schematic of a typical "Daisy Cluster" type of campground.

The configuration of the campground loop road was carefully selected to provide the most facilities per road foot while maintaining the feeling of open spaciousness and esthetic appeal. The future addition of a high density modern trailer parking area was also provided to the west of the present area. When it becomes necessary to develop this site it will incorporate individual trailer pullthroughs with their own service connections. When these modern facilities are provided an additional charge to cover their cost will have to be levied.

There is now a modern comfort station on the site with flush toilets, along with the accompanying water and sewage system.

The power lines in the area have been rerouted and buried to provide a more esthetically pleasing and natural landscape.

A new trailer dump station has been installed to provide trailers a place to empty their holding tanks in a lawful and sanitary manner.

Future plans include landscape planting. The type of plantings will have to be carefully selected to avoid low growing shrubs for they would provide cover for snakes which have been known to frequent the area.

Near the cavern entrance at headquarters area a new water system was installed which included an 18,006 gallon storage tank 93 feet above the use area to provide the volume of water the large increase in visitors has demanded.

The sewer, electrical, and water services at the employee living quarters have been renovated.

A new sewer system was also installed for the lodge building. The old one was overtaxed and failed earlier every year.

The existing parking area has been regraded, paved and striped. This will allow more vehicles to park with less confusion.

While not a part of the Bureau of Outdoor Recreation Project, this year we have started the renovation of the lodge building and museum display area. The work should be completed by the end of the summer. So far we have retiled the floor and installed a new ticket counter, with new lighting and the museum displays yet to come.

The new museum displays will include a relief map of the state, a display illustrating the evolution of prehistoric man in the caverns area, one panel devoted to rock formations in the caverns, other panels will be devoted to flora and fauna of the area. The last panel will depict the geology of the area.

Hopefully all of this will provide the caverns visitor with a more comfortable, enlightening and enjoyable trip to this interesting and scenic area.

A Story Needs to Be Told

By: Ashley C. Roberts

"You have a very interesting park here. Now, tell me, how did all this happen?", inquired the recent visitor to Medicine Rocks State Park on a recent visit.

"This is an awesome spectacle. It makes one wonder just what took place." So remarked the traveler in Makoshika State Park.

"Did Lewis and Clark really discover the caverns in Lewis and Clark Caverns State Park?" asked the vacationer from Missouri.

These and thousands of questions just like them are repeated over and over again in our Montana state parks, recreation areas, state monuments, recreation waterways and recreation roads. In Montana we play host to some three million visitors from out of state each year. Several hundred thousands of these visitors, along with residents from Montana, use the state parks and recreation areas. As they visit these areas they become intigued with the natural or man-made phenomenon they may be viewing for the first time in their lives. They want to know "Why is this?" . . . "What happened here?" . . . "What are those mountains?" . . . "What kind of fish are caught here?"

A story needs to be told.

Many of the areas of the state park system were selected because of unusual scenic qualities, geologic formations, archaeologic formations, archaeologic revelations, historic significance or simply because of the recreational quality of the site. Each has a story that needs to be told . . . and in telling the story, we hope to reveal to the visitor something of the beauty and wonder, the inspiration, the historical truths and the significance of what he can perceive with his senses. This fucntion is called Interpretation.

Interpretation is a device—a means of setting forth the story that needs to be told. Well done, the interpretation used in any area will enrich the visitor's experience, inform him and leave him with a sense of satisfaction. He has achieved something in addition to a mere visit to a park or recreation area.

The Recreation and Parks Division of the Fish and Game Department is just getting a start in this field. It is an activity that we intend to pursue as rapidly as we possibly can.

One of our first experiences was at Fort Owen State Monument. Arrangements were made with the University of Montana for an achaeologic dig of the area, which was carried on several years ago. All of the artifacts were gathered, catalogued and the findings arranged in a book which "tells much of the story" of life in the old fort. Eventually these findings will be displayed at Fort Owen in a small museum.

At Bannack State Monument and at the Missouri River Headwaters State Monument, trails with markers are established which the visitor can follow. Signs along the trails provide brief information of the events that occurred in these places. The interpretation of these areas is supplemented with brochures that the visitor may take and which supply additional information about the historic events that took place. These trails and brochures are currently being updated for use in the future.

At the headquarters building at Lewis and Clark Caverns State Park, we are currently revising the entire interpretive display. Information will be provided on the flora and fauna of the area, the geology of the caverns and the formations that are found within the caverns. In addition, general information on Mon-

tana will be displayed. Back lighted transparencies, a relief map and art work will be among the techniques usd in the interpretive displays.

An interpretive shelter building has been erected at the **Madison Buffalo Jump** south of Logan. The shelter is open on all sides and has seven pedestals overlooking the jump, the Indian village site and a view of the Madison Valley. Each pedestal will contain information relative to various aspects of the jump including the village site, the plains Indians, the significance of the buffalo in the life of the Indians along with other general information about buffalo jumps in general. Photos and ink sketches on metal photo plates will be used in these displays.

Along the Missouri River — **Wolf Creek Canyon Recreation Road,** we have installed pedestals with metal photo plates at various locations. These exhibits provide information on the ecology of the area, the types of fish to be found, something on the flora and general information on the geology of the canyons. Routed map signs with information on the road have been placed at the north end and the south end of the road for the convenience of the traveler.

As we proceed with the program we expect to provide similar types of interpretive devices at **Makoshika State Park** to tell the story of the badlands. Nature trails will also be used. The story of the sandstone formations in **Medicine Rocks State Park** and the use the Indians made of this area long ago will be revealed. All of the historic sites in the park system will be provided with factual information as to the events that took place. Scenic areas, such as our recreation areas and parks in the Flathead will tell the ecology story and provide information on the Flathead Valley. Geographic facts on Montana will be used wherever possible.

This will be a continuing program. As we install the interpretive devices in our park and recreation areas, newer and more modern techniques will be used. All of this, we hope, will make a visit to any of our parks or recreation areas more meaningful as we tell the story that needs to be told.

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